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Maldistribution or scarcity of nurses? The devil is in the detail

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This study was conducted as part of a PhD in Organizational Science and was financed by Cordaan.

Aims: The goal of this paper was to improve our understanding of nursing shortages across the variety of health care sectors and how this may affect the agenda for addressing nursing shortages. A health care sector comprises a number of health care services for one particular type of patient care, for example, the hospital care sector.

Background: Most Western countries are shifting health care services from hospital care towards community and home care, thus increasing nursing workforce challenges in home and community care. In order to implement appropriate policy responses to nursing workforce challenges, we need to know if these challenges are caused by maldistribution of nurses and/or the scarcity of nurses in general.

Evaluation: Focusing on the Netherlands, we reviewed articles based on data of a labour market research programme and/or data from the Dutch Employed Persons' Insurance Administration Agency. The data were analysed using a data synthesis approach.

Key Issues: Nursing shortages are unevenly distributed across the various health care sectors. Shortages of practical nurses are caused by maldistribution, with a long-term projected surplus of practical nurses in hospitals and projected shortages in nursing/convalescent homes and home care. Shortages of first-level registered nurses are caused by general scarcity in the long term, mainly in hospitals and home care.

Conclusions: Nursing workforce challenges are caused by a maldistribution of nurses and the scarcity of nurses in general. To implement appropriate policy responses to nursing workforce challenges, integrated health care workforce planning is necessary.

Implications for Nursing Management: Integrated workforce planning models could forecast the impact of health care transformation plans and guide national policy decisions on transitioning programmes. Effective transitioning programmes are required to address nursing shortages and to diminish maldistribution. In addition, increased recruitment and retention as well as new models of care are required to address the scarcity of nurses in general.

KEYWORDS

health care sectors, maldistribution, nursing shortages, scarcity

1 | INTRODUCTION

In order to reduce the costs of care and to meet the needs of an ageing population and chronic disease burden, most Western countries are shifting health care services from hospital care towards community and home care (Ashley, Halcomb, & Brown, 2016; Genet, Boerma, Koimann, Hutchenson, & Saltman, 2013; Tourangeau et al., 2014). In their integrative review of transitioning experiences of hospital nurses, Ashley et al. (2016), for example argue for recruiting new graduate nurses and encouraging experienced nurses to move from employment in hospital care to community and home care to meet the increasing demands for skilled home and community nurses.

This call for nurses to be repositioned to meet the increasing needs of community and home care nurses implies that nursing shortages in community and home care are caused by maldistribution of nurses. Maldistribution of nurses is defined as the imbalanced distribution of nurses in the health care system. Imbalanced distribution refers to particular inequities in the allocation of nurses as to a standard or social norm of a certain staff density. From this perspective, a balanced distribution of nurses can be realized by allocating nurses according to the need for health care services (Dussault & Franceschini, 2006; Munga & Mæstad, 2009).

In their editorial on nursing shortages, however, Buchan, Duffield, and Jordan (2015) argue that nursing shortages are currently experienced worldwide and are likely to get worse without remedial policy interventions. These nursing shortages are mainly caused by the increasing and changing demands on health services and a shrinking nursing workforce, with more nurses nearing or reaching retirement age and leaving the nursing workforce (Buchan et al., 2015). As a result, there is a scarcity of nurses, that is, the number of nurses is below a minimum density threshold of nurses to accomplish specific health targets (Joint Learning Initiative, 2004; World Health Organization, 2006). The World Health Organization (WHO) recently estimated a global deficit of 12.9 million health workers by 2035 (World Health Organization, 2014). As nurses are the largest professional group within the health workforce in most countries, these estimates are troublesome (Buchan et al., 2015) and solutions aiming to help nurses to make the transition from hospital care to home care (Ashley et al., 2016) will not help.

Whereas solutions to the maldistribution of nurses are related to nurse transitioning programmes (i.e., helping nurses who work in one type of care to transition to another type of care), solutions to the scarcity of nurses are related to an increasing supply and/or a decreasing demand for nurses (i.e., training more nurses in general, motivating nurses to work longer, or organizing care in a more efficient way). To design appropriate policy responses to nursing workforce challenges, we need to know first and foremost if nursing shortages are caused by the scarcity of nurses in general or by maldistribution across the various health care sectors.

Unfortunately, most attempts to examine nursing shortages have been directed at general scarcity rather than at sector-specific patterns (for example, Attström, Niedlich, Sandvliet, Kuhn, & Beavor, 2014; Ono, Lafortune, & Schoenstein, 2013). Our aim, however, is to

show that 'the devil is in the detail': by examining the expected developments in the distribution of nurses across health care sectors, we will demonstrate that patterns emerge other than by examining only general nursing shortages and that this more specific approach is more helpful towards designing interventions.

Health care systems in different countries are organized in different ways (Ono et al., 2013; Sermeus, Aiken, & Van den Heede, 2011) and nursing shortages are defined and measured in relation to the countries' own standards regarding the right nurses-to-population ratio (Sermeus et al., 2011). In order to improve our understanding of nursing shortages across various health care sectors, we have examined the case of nursing shortages in the Netherlands. Examining the details of nursing shortages within one particular country has the advantage of understanding those shortages in relation to the local health care system and the nursing workforce. In 2015, the Dutch government instigated a reform of the health care system, and, in consequence, health care delivery has shifted from intramural care to care at home and in the patients' own environment (Panteia et al., 2013). Therefore, the Dutch health care system is an interesting example of health care reforms that have occurred in many Western European countries (Ashley et al., 2016; Genet et al., 2013; Tourangeau et al., 2014).

2 | NURSES IN THE DUTCH HEALTH CARE SYSTEM

Before describing what sources of information we used and how these were evaluated, we will briefly describe the structure of the Dutch health care system, the nursing profession and nursing workforce policies.

The Dutch health care system can be divided into short-term and long-term care: short-term care aims to provide treatment and cure in academic and specialist hospitals, independent treatment centres, and clinical and trauma care centres; long-term care aims to provide continuous care and support, which may be in institutions or at home (Panteia et al., 2013; Post & Gijzen, 2013). More specifically, long-term care can be divided into three types: (1) nursing/convalescent homes and home care, (2) care for disabled and (3) mental health care (Panteia et al., 2013).

Nursing/convalescent homes provide long-term care for people with somatic or psycho-geriatric problems. Nursing homes and convalescent homes provide institutionalized care, the former providing intensive care and the latter providing support and non-intensive care. Home care provides care at home (Panteia et al., 2013). Care for disabled is long-term care and support for people with disabilities, such as physical limitations, mental limitations, or sensory limitations such as blindness or visually impairment and deafness or aural impairment (Panteia et al., 2013). Mental health care provides long-term care for people with mental or psychiatric problems (Panteia et al., 2013).

In both short-term and long-term care, nursing and care services are provided by four types of nurses: first- and second-level registered nurses, practical nurses, and nurse assistants. Table 1 provides an overview of these types of nurses arranged by the level of education and work

TABLE 1 An overview of type of nurse by level of education and work responsibilities (Panteia et al., 2013; Post & Gijzen, 2013; Youchooze.nl, n.d.)

Type of nurse	Education by European Qualifications Framework Level (only relevant levels are shown)	Work responsibilities
First-level registered nurses	Level 6	Assess patients' nursing needs Decide appropriate level of nursing care Provide nursing and support to patients
Second-level registered nurses	Level 4	Assess patients' nursing needs Provide nursing and support to patients
Practical nurses	Level 3	Provide nursing and support to patients
Nurse assistants	Level 2	Provide support in basic everyday activities, such as bathing, dressing, personal hygiene, cleaning and food preparation

responsibilities, a higher level of education being associated with more complex work responsibilities (Post & Gijzen, 2013; Youchooze.nl, n.d.).

Most nurses, that is, 26% and 23% of the nursing workforce (level 2 to level 6), work in hospitals or nursing and convalescent homes, respectively (AZWinfo, 2016). Hospitals employ mostly first- and second-level registered nurses, whereas nursing and convalescent homes employ mostly practical nurses and nurse assistants (AZWinfo, 2016) (Table 2).

Compared with most other countries, the Netherlands have an advanced demand-led forecasting model for medical and specialist professions. Health workforce planning is an important instrument for forecasting and controlling shortages and oversupply. The forecasting model is developed to support national policy decisions on the inflow, that is, implementing a fixed maximum number of entrants admissible to medical and specialist training (Batenburg, 2013; Kroneman et al.,

2016). Adjusting the student intake or inflow is the primary health policy action to control medical and specialist workforce size and supply. For nurses, however, such a forecasting model does not exist. Nursing workforce developments are only monitored at regional level (Van Greuning, 2016). This implies that policy decisions on a fixed maximum number of entrants admissible to educational programmes in nursing are made by educational institutions and are based on the capacity of internships rather than nursing workforce developments.

3 | EVALUATION

3.1 | Aims

The goal of this paper is to increase our understanding of nursing shortages across the variety of current health care sectors in the Netherlands and how this may affect the agenda for addressing nursing shortages. Reviewing the literature, we have examined the magnitude of current and future nursing shortages across the various health care sectors in the Dutch health care system.

3.2 | Search strategy

We conducted an Internet literature review using electronic databases and search engines. The following electronic databases were used: Sciencedirect, Cochrane Library and SSRN (Social Science Research Network). The primary search engines used for the Internet searches were provided by Google at <http://www.google.com> and Google Scholar at <http://www.scholar.google.com>. We used the following key words in English and Dutch 'nursing shortages' AND 'Netherlands' OR 'Europe' (Figure 1).

3.3 | Inclusion criteria

We applied three inclusion criteria: (1) scientific literature as well as non-academic research publications from 2014 onwards, focusing on current and future nursing shortages in the Netherlands after the introduction of the health care reform; (2) scientific literature as well as secondary literature focusing on current and future nursing shortages in Europe, and (3) publications in English or Dutch. We used one exclusion criterion: scientific literature as well as secondary literature that did not take the 2015 Dutch health care reform into account.

TABLE 2 An overview of the distribution of nurses across the Dutch health care system in percentages (AZWinfo, 2016)

Type of nurse	First-level registered nurses	Second-level registered nurses	Practical nurses	Nurse assistants
Type of patient care				
Hospital	46%	47%	5%	3%
Nursing/convalescent homes	11%	14%	53%	53%
Home care	15%	7%	27%	19%
Disabled care	6%	14%	6%	7%
Mental health care	14%	9%	2%	1%
Other	8%	9%	6%	18%

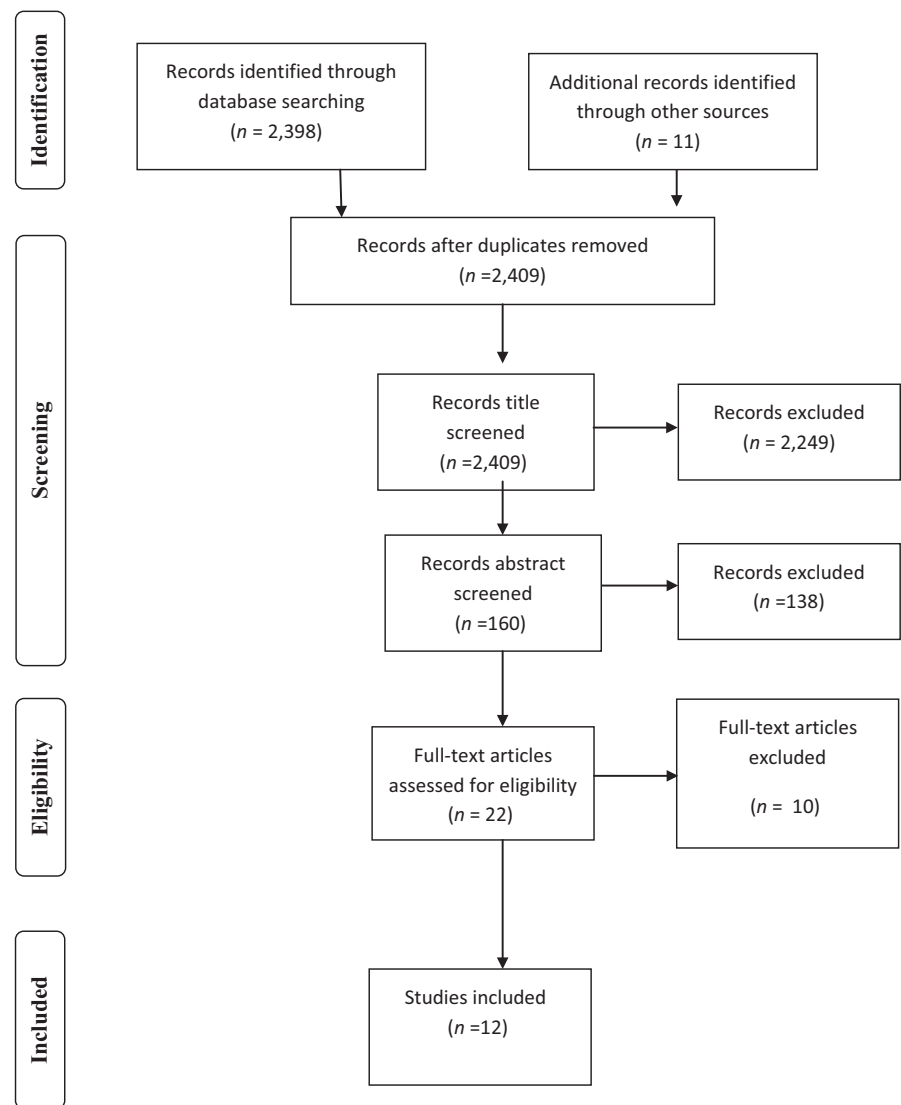


FIGURE 1 Search strategy

3.4 | Screening

Titles were reviewed and abstracts retrieved if potentially relevant information was identified in the title. Consequently, abstracts were reviewed and full texts were retrieved if potentially relevant information was identified in the abstract. Furthermore, reference lists of retrieved full texts were scanned, and Web of Science (a citation index) was searched for related literature that had previously been missed or omitted.

Included publications were critically appraised using the critical appraisal tool developed by Woolliams, Williams, Butcher, and Pye (2009). This appraisal tool is suitable for all types of academic literature (Aveyard, 2014).

3.5 | Data extraction and synthesis

The included studies were reviewed to extract the following data: author, organization, date, setting, design and predictions. The data were analysed using the data synthesis approach described by Aveyard (2014).

4 | KEY ISSUES

4.1 | Overview of the included studies

The included papers were published in the 2014–2016 period. All papers were in Dutch. Table 3 shows an overview of the included studies with their methodology and their findings.

4.2 | Quality of the included studies

The included studies were based on the data of a labour market research programme and/or data from the Dutch Employed Persons' Insurance Administration Agency. We also included non-academic research publications after careful examination of the methodology and sources of publications. Regarding the methodology, the articles used scenario generation methodology and interviews and/or focus groups with employers and experts. Regarding the sources of the publications, the labour market research programme has been founded to provide reliable information on the health care labour market for organisations in the health care sector to make strategic human resource planning

decisions. This research programme was funded by the government and other social parties. The Dutch Employed Persons' Insurance Administration Agency provides information about the labour market to public organisations to prevent unnecessary unemployment.

4.3 | Nursing shortages across the Dutch health care system

The findings on nursing shortages are narrative as well as qualitative and show that future nursing shortages are expected in the Netherlands (Table 3).

Shortages are imminent for first-level registered nurses, although there are differences between the health care sectors. A surplus of first-level registered nurses is expected in hospitals in the short term (Panteia et al. 2014), followed by a shortage from the year 2017 or 2019 onwards due to the advanced roles that these first-level registered nurses will be playing (Van Essen, Kramer, Van der Velde, & Van der Windt, 2016; Van der Windt & Bloemendaal, 2015a, 2015b, 2015c, 2015d, 2015g); in order to reduce cost and improve care, first-level registered nurses will take over certain tasks from physicians, thus advancing the roles that these nurses are expected to play. In home care, shortages of first-level registered nurses already exist, and, depending on different scenarios, are expected to remain or to increase until the year 2019 (Bloemendaal, Van Essen, Kramer, & Van der Windt, 2015). Shortages of first-level registered nurses are also expected in mental care (Van der Windt & Bloemendaal, 2015g), but there are no projections for 2020 and beyond.

Projections of shortages of second-level registered nurses are inconclusive. Depending on governmental policies, a shortage of second-level registered nurses can be expected from 2016 until 2019, or a small surplus can be expected until 2019 (Kalkhoven & Van der Aalst, 2015; Van der Windt & Bloemendaal, 2015a, 2015b, 2015c, 2015d, 2015e, 2015f, 2015g). There are no projections for 2020 and beyond. Projections of shortages of second-level registered nurses focus on hospitals and home care (Kalkhoven & Van der Aalst, 2015; Panteia et al., 2014).

A surplus of practical nurses is expected in the short term (Panteia et al., 2014), followed by a shortage from the year 2017 or 2019 onwards (Van der Windt & Bloemendaal, 2015c, 2015d, 2015e, 2015f, 2015g). A surplus of practical nurses is expected in hospitals (Panteia et al., 2014). Shortages of practical nurses are mainly expected in the nursing homes and convalescent homes sector and the home sector from the year 2019 (Van der Windt & Bloemendaal, 2015d). There are no projections for 2020 and beyond.

For nurse assistants, a surplus is expected in all types of patient care (Kalkhoven & Van der Aalst, 2015; Panteia et al., 2014; Van der Aalst, 2015).

5 | DISCUSSION

We conclude from these findings that nursing shortages are projected for practical as well as first-level registered nurses. These shortages, however, are unevenly distributed across the various health care

sectors. Regarding shortages of practical nurses, our results show that maldistribution appears to be responsible for these shortages, with a long-term projected surplus of practical nurses in hospitals and shortages in nursing/convalescent homes and home care. Our findings suggest the appropriateness of encouraging experienced practical nurses to move from employment in hospital care to community and home care.

Encouraging experienced nurses to move, however, is challenging. The working environments of home care nurses differ from those of hospital nurses in many ways. Hospital nurses, for example, work in an environment in which physical resources are readily available, but home care nurses work in clients' homes where physical resources, such as pulse oximeters and stethoscopes, are not always present, which makes their work challenging (Tourangeau et al., 2014). Working at clients' homes alone, moreover, may be lonely, whereas hospital nurses have colleagues close by (Tourangeau et al., 2014). Working alone at night, in potentially unsafe neighbourhoods or with unfamiliar clients, is a significant safety concern for home care nurses (Tourangeau et al., 2014).

Due to these differences in working environments it is unlikely that hospital nurses can transfer to home and community care without any additional education or coaching (Panteia et al., 2013). Hospital nurses who transfer to community and home care are often not adequately prepared for this change in practice, and limited attention has been paid to such nurse transitions (Ashley et al., 2016). Research is urgently needed to explore effective transitioning programmes that facilitate optimal transition experiences and enhance the recruitment and retention of nurses in home care.

Regarding shortages of first-level registered nurses, our results show that general scarcity in the long term rather than maldistribution appears to be responsible for the projected shortages. Surprisingly, we found that even though hospitals employ the highest percentage of first-level registered nurses, a small surplus of first-level registered nurses is expected in hospitals in the short term. In the long term, however, shortages of first-level registered nurses are expected to occur in hospitals because the implementation of advanced roles to be taken on by them will increase demand for them. The home care sector, however, is already facing shortages of first-level registered nurses and is expecting these to increase. Our results show that general scarcity in the long term rather than maldistribution appears to be responsible for these shortages.

Another surprising finding was the negative influence of advanced practice roles on nursing shortages. Advanced practice roles are offered as a general solution for nursing shortages, as nurse retention is expected to improve by offering advanced career prospects and additional training (Buchan et al., 2015). However, we found that advanced practice roles will actually increase the demands for nurses: as tasks will be devolved from physicians to first-level registered nurses, more nurses will be required to perform these tasks (Van Essen et al., 2016).

6 | IMPLICATIONS FOR NURSING MANAGEMENT

The primary goal of the Dutch health workforce planning model is to support policy decision making on medical and specialist workforce

TABLE 3 Data extraction

Author	Organisation	Date	Setting	Design	Predictions
Bloemendaal et al. (2015)	Kiwa Charity/ CAOP	2015	Home care	Interviews with health care organisations and government, questionnaires among health care workers, and scenario generation methodology	In the coming years, huge shortages of first-level registered home care nurses are expected. A shortage of 750 to 1,000 first-level nurses is expected in 2016. Depending on the different scenarios, shortages are expected to remain or increase until 2019
Kalkhoven & Van der Aalst (2015)	UWV	2015	Health care general	Data from a labour market research programme ^a and three other databases	In 2017–2019 nursing shortages are expected for first-level and second-level registered home care nurses. In 2017–2019, nursing shortages are expected for first-level registered nurses in long-term care facilities. Surplus of nurse assistants is present and expected to remain in the near future
Van der Windt & Bloemendaal (2015a)	Kiwa Charity	2015	Academic hospitals	Data from a labour market research programme	Shortages of first-level registered nurses are expected in hospitals, home care and mental care from 2016 to 2019. The data for second-level registered are inconclusive. Depending on governmental policies, a small shortage of second-level registered nurses can be expected from 2016 towards 2019 or a small surplus until 2019
Van der Windt & Bloemendaal (2015b)	Kiwa Charity	2015	General hospitals	Data from a labour market research programme	Shortages of first-level registered nurses are expected in hospitals, home care, and mental care from 2016 to 2019. The data for second-level registered are inconclusive. Depending on governmental policies, a small shortage of second-level registered nurses can be expected from 2016 towards 2019 or a small surplus until 2019
Van der Windt & Bloemendaal (2015c)	Kiwa Charity	2015	Home care	Data from a labour market research programme	Shortages of first-level registered nurses are expected in hospitals, home care, and mental care from 2016 to 2019. The data for second-level registered are inconclusive. Depending on governmental policies, a small shortage of second-level registered nurses can be expected from 2016 towards 2019 or a small surplus until 2019. Shortages of practical nurses are expected from 2017 or 2018 towards 2019
Van der Windt & Bloemendaal (2015d)	Kiwa Charity	2015	Nursing/convalescent homes	Data from a labour market research programme	Shortages of first-level registered nurses are expected in hospitals, home care and mental care from 2016 to 2019. The data for second-level registered are inconclusive. Depending on governmental policies, a small shortage of second-level registered nurses can be expected from 2016 towards 2019 or a small surplus until 2019. Shortages of practical nurses are expected from 2017 or 2018 towards 2019
Van der Windt & Bloemendaal (2015e)	Kiwa Charity	2015	Disabled care	Data from a labour market research programme	Shortages of second-level registered nurses expected in 2017 or 2019, depending on governmental policies. Shortages of practical nurses are expected from 2017 or 2018 towards 2019
Van der Windt & Bloemendaal (2015f)	Kiwa Charity	2015	Mental health care	Data from a labour market research programme	The data for second level registered are inconclusive. Depending on governmental policies, a small shortage of second-level registered nurses can be expected from 2016 towards 2019 or a small surplus until 2019. Shortages of practical nurses are expected from 2017 or 2018 towards 2019
Van der Windt & Bloemendaal (2015g)	Kiwa Charity	2015	Nursing and social welfare staff	Data from a labour market research programme	Shortages of practical nurses are expected in nursing and convalescent homes in 2019. Shortages of first-level registered nurses are expected in hospitals, home care and mental care between 2014 and 2019. The data for second-level registered are inconclusive. Depending on governmental policies, a small shortage of second-level registered nurses can be expected from 2016 towards 2019 or a small surplus until 2019

(Continues)

TABLE 3 (Continued)

Author	Organisation	Date	Setting	Design	Predictions
Panteia et al. (2014)	Panteia, SEOR, Etil	2014	Health and social care	Data from a labour market research programme	Surplus of first-level nurses expected in hospitals until 2017. Shortages of second-level registered nurses are possible but not sure until 2017. Shortages of second-level nurses expected in hospitals until 2017. Surplus of practical nurses until 2017. Surplus of nurse assistants until 2017
Van der Aalst (2015)	UWV	2015	Labour market general	A database and qualitative interviews with labour market experts	Due to the health care system transition towards home care, shortages of first-level registered nurses are present (2014) and expected to remain between 2017 and 2019. Shortages are expected for second-level registered nurses in 2017-2019. Many nurse assistants are losing their jobs
Van Essen et al. (2016)	CAOP	2016	Health and social care	Data from a labour market research programme	There is and will be shortages of first-level registered nurses in the home care sector. In the coming year, shortages are expected for first-level registered nurses due to expansion of advanced practice roles for these nurses in hospitals. However, a surplus of these nurses is expected in hospitals in the short term

^aThe labor market research program used scenario generation methodology and interviews and/or focus groups with employers and experts to make projections about the healthcare labor market.

planning (Van Greuningen, 2016). Government and policymakers should, however, use an integrated health workforce-planning model that also takes the nursing workforce and various health care sectors into account. It implies a shift from planning separate occupations to an integrating workforce-planning model of multiple health professionals across health care sectors (Van Greuningen, 2016). The development of such integrated workforce-planning model across health care sectors is necessary to understand and predict the impact of reallocation of tasks between these health care professionals.

Furthermore, integrated workforce planning models could forecast the impact of health care transformation plans (Van Greuningen, 2016) and guide national policy decisions on transitioning programmes. Effective transitioning programmes, that facilitate optimal transitioning experiences, are needed to make more effective and productive use of the nursing staff and nursing skills present in the nursing workforce. Transitioning programmes towards home care should contain support systems such as organizational orientation, mentoring and team support in the work to teach the autonomous nature of the work and the development of rewarding relationships with clients (Ashley et al., 2016).

The scarcity of first-level registered nurses challenges the sustainability of health systems. Traditional solutions for dealing with the scarcity of nurses have focused on supply side manipulation, such as recruiting new first-level registered nurses and retaining nurses. In addition, new models of care are needed to decrease demands for first-level nurses. Demands for nurses could be reduced by new models of care, focusing on disease prevention, reducing over-utilization of health care services, and a mix of professional nurses and informal carers who use technology effectively. Research is needed to explore new models of care that will be sustainable in terms of costs and human resources.

7 | LIMITATION

A limitation of this review is its use of non-academic literature. However, we considered these articles reliable because of the methodology they used and the reason and purpose of their publication.

8 | CONCLUSION

The goal of this paper was to improve our understanding of nursing shortages across the variety of current health care sectors and how this may affect the agenda for addressing nursing shortages. We found that the predicted nursing shortages are unevenly distributed over the Dutch health care system and are caused by both maldistribution and scarcity of nurses. Integrated health workforce planning across various health care sectors is essential to be able to decide on appropriate policy responses to nursing workforce challenges.

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